

SECTION 05 5000

METAL FABRICATIONS

LANL MASTER SPECIFICATION

When editing to suit project, author shall add job-specific requirements and delete only those portions that in no way apply to the activity (e.g., a component that does not apply). To seek a variance from applicable requirements, contact the ESM Structural POC.

When assembling a specification package, include applicable specifications from all Divisions, especially Division 1, General Requirements.

Delete information within "stars" during editing.

Specification developed for ML-3 projects. For ML-1 / ML-2, additional requirements and QA reviews are required.

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Shop fabricated metal items; galvanized, prime painted, or mill finish.

1.2 DESIGN REQUIREMENTS

- A. Submit the following in accordance with Section 01 3300, Submittal Procedures:

- 1. Shop drawing describing each fabricated item.
 - a. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size type of fasteners, and accessories.
 - b. Include erection drawings, elevations, and details where applicable.
 - c. Indicate welded connections using standard AWS welding symbols. Indicate net weld lengths.
- 2. Catalog data describing each manufactured metal item.
- 3. Certificate of Compliance for:
 - a. Steel ladders.
 - b. Fall arrestors.
- 4. Welders certifications.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle metal items:

1. With equipment of adequate capacity.
 2. Without overstressing or permanently deflecting material.
 3. Without damaging finish
- B. Deliver manufactured material in original unopened packages, containers, or bundles with manufacturer's label intact and legible.
 - C. Store materials off ground, under cover, and away from damp surfaces.
 - D. Remove damaged unlabeled or unsatisfactory materials which do not meet this specification from job site.

PART 2 PROUDUCTS

2.1 MATERIALS

- A. Provide steel sections and plate conforming to ASTM A36.
- B. Provide steel tubing conforming to ASTM A500, grade B.
- C. Provide steel pipe conforming to ASTM A53, type E or S, grade B.

 Aluminum to be used in PC-1 and PC-2 structures

- D. Provide aluminum sections conforming to ASTM B221, 6061-T6 alloy, mill finish.
- E. Provide aluminum plates conforming to ASTM B209, 6061-T6 alloy, mill finish.
- F. Provide standard bolts conforming to ASTM A307.
- G. Provide high strength bolts conforming to ASTM A325.
- H. Provide nuts conforming to ASTM A563, type and grade as specified in ASTM A307 and A325.
- I. Provide flat and beveled washers conforming to ASTM F436.
- J. Provide prevailing torque type self locking nuts conforming to IFI - 100, grade A, zinc coated.
- K. Provide spring type lock washers conforming to ANSI B27.1.L. Provide welding materials in accordance with AWS D1.1 and D1.2 for materials being welded.
- M. Provide general use primer conforming to FS TT-P-31, red; for shop application and field touch-up.
- N. Provide touch-up primer for galvanized surfaces conforming to FS TT-P-641.

- O. Provide primer for aluminum to be in contact with steel conforming to FS TT-P-645.
- P. Provide grout conforming to the following:
 - 1. Non-shrink type, pre-mixed compound consisting of non-metallic aggregates, cement, water reducing, and plasticizing additives, capable of developing a minimum Compressive strength of 7,000 psi at 28 days.
- Q. Provide expansion type concrete anchors conforming to FS S-325 Type II.
- R. Provide Headed Steel Anchors (HSA) as manufactured by TRW Nelson Division type [H4L] or Approved equally.

2.2 FABRICATION

- A. Verify dimensions on site prior to shop fabrication.
- B. Fabricate items with joint tightly fitted and secured.
- C. Fit and shop assemble in largest practical sections, for delivery to site.
- D. Grind exposed welds flush and smooth with adjacent finished surface. Ease exposed edges to small uniform radius.
- E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of structure, except where specifically noted otherwise.
- F. Make exposed joints butt tight, flush, and hairline.
- G. Supply components required for anchorage of metal fabrications. Fabricate anchorage and related components of same material and finish as metal fabrication, except where specifically noted otherwise.
- H. Provide ladders conforming to OSHA 29 CFR Part 1910, Section 1910.27 - Fixed Ladders and ANSI A14.3 - Safety Code for Fixed Ladders.
- I. Certify Welders in accordance with AWS D1.1 and AWS D1.2.

2.3 FINISH OF STEEL FABRICATIONS

- A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- B. Do not prime surfaces in direct contact bond with concrete or where field welding is required.
- C. Prime items with one coat.

PART3 EXECUTIONS

3.1 PREPARATION

- A. Obtain Contract Administrator approval prior to site cutting or making adjustments to metal Items.
- B. Clean and strip site primed steel items to bare metal where site welding is scheduled.
- C. Make provision for erection loads with temporary bracing. Keep work in alignment.
- D. Supply items required to be cast into concrete with setting templates, to appropriate Sections.

3.2 INSTALLATIONS

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Perform field welding in accordance with AWS D1.1 and AWS D1.2.
- C. After installation, touch-up field welds and scratched or damaged surfaces on metal Fabrications with primer.

END OF SECTION

Do not delete the following reference information:

FOR LANL USE ONLY

This project specification is based on LANL Master Specification 05 5000 Rev. 0, dated January 6, 2006.